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ARCHIVES INTERNATIONALES

DE

Pharmacodynamie et de Thérapie

PUBLIÉES PAR

E. GLEY, Paris et **J.-F. HEYMANS**, Gand

AVEC LA COLLABORATION DE

J.-J. Abel, Baltimore ; **M. Arthus**, Lausanne ; **E. L. Backman**, Upsal ; **Benedicenti**, Gênes ; **J.-C. Bock**, Copenhague ; **A. Bonanni**, Pavie ; **J. Bordet**, Bruxelles ; **R. Bruynoghe**, Louvain ; **A.-J. Clark**, Londres ; **M. Cloetta**, Zurich ; **G. Coronedi**, Florence ; **P. Courmont**, Lyon ; **H.-H. Dale**, Londres ; **W.-E. Dixon**, Cambridge ; **P. Giacoso**, Turin ; **J.-A. Gunn**, Oxford ; **V. E. Henderson**, Toronto ; **F. Henrijean**, Liége ; **C. Heymans**, Gand ; **M. Ide**, Louvain ; **A. Lumière**, Lyon ; **E. Malvoz**, Liége ; **P. Marfori**, Naples ; **M. Miculicich**, Zagreb ; **K. Morishima**, Kyoto ; **P. Nolf**, Liège ; **J. Novi**, Bologne ; **C. E. Overton**, Lund ; **E. Poulsson**, Christiania ; **Reid Hunt**, Boston ; **Ch. Richet**, Paris ; **G. Roux**, Paris ; **L. Sabbatani**, Padoue ; **T. Sollmann**, Cleveland ; **M. Tiffeneau**, Paris ; **A. Valenti**, Parme ; **G. Vinci**, Messine ; **E. Zunz**, Bruxelles.

VOLUME XXXII, FASCICULE I-II.

EXTRAIT

ARTHUR ROBERTSON CUSHNY

PAR

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BRUXELLES
H. LAMERTIN, ÉDITEUR
58, RUE COUDENBERG

PARIS
O. DOIN, ÉDITEUR
8, PLACE DE L'ODEON

1926

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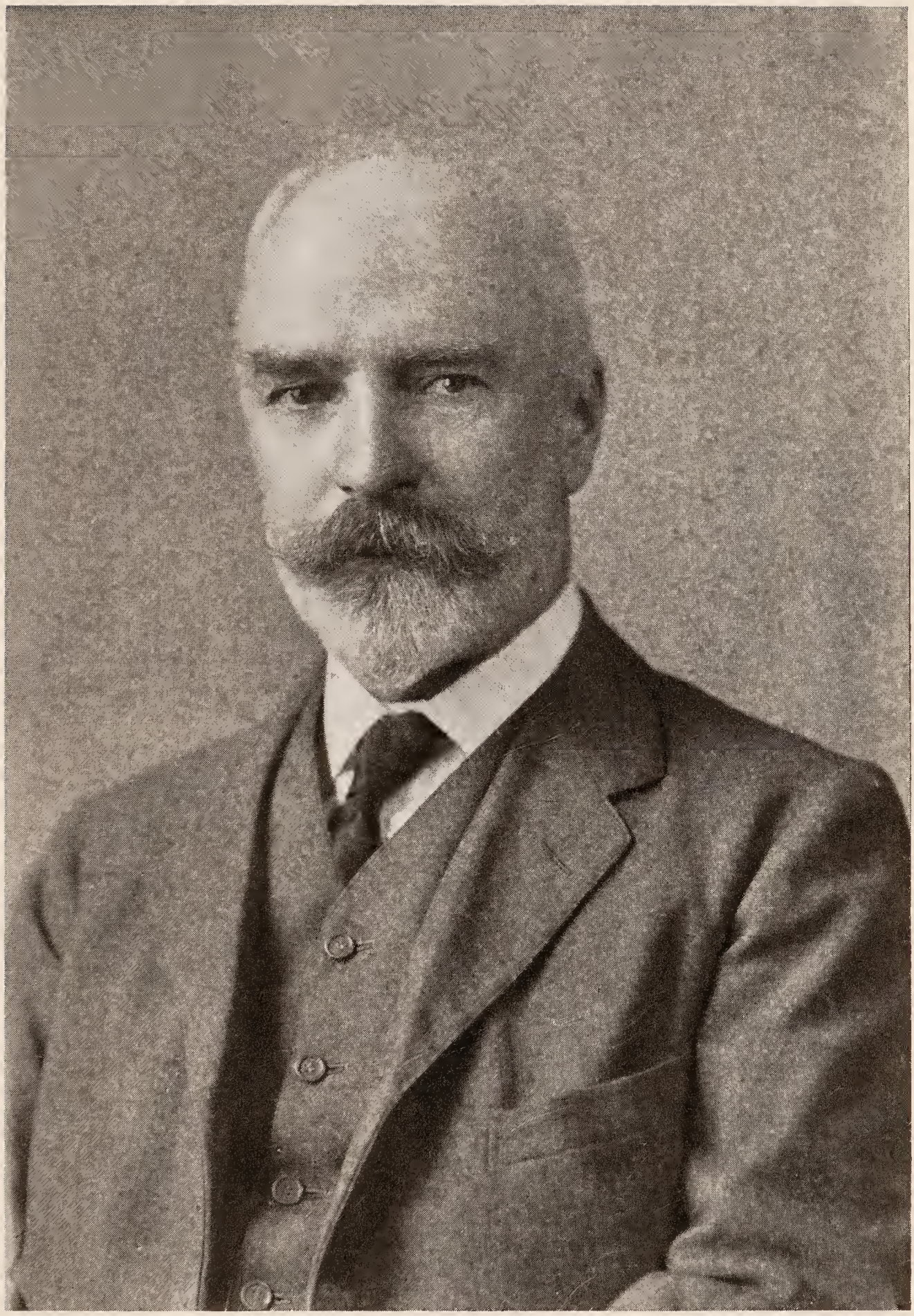
1866-1926



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ARTHUR ROBERTSON CUSHNY

1866-1926.

Arthur Robertson Cushny, who died suddenly on February 24th of this year, was not only the leading Pharmacologist of Great Britain, but a figure of truly international importance in the world of experimental medecine. The fourth son of a Scottish clergyman, he was born at Fochabers, Morayshire, on March 6th, 1866. He passed from the local school to Aberdeen University, where he took the degree of M. A. in 1886. He had by this time already entered as a student of medecine at the Marischal College, the medical school of Aberdeen, and in 1889 he graduated M. B., C. M., with the highest honours. Cushny did not, as some have done, become a Pharmacologist by accident of opportunity. It seems rather that the teaching of John Theodore Cash, who survives him in honoured retirement, aroused his interest in the subject, and determined his deliberate choice of it for his life's work. To that choice he was able to give immediate effect, when, being awarded the George Thompson Fellowship in the year of his medical graduation, he left for the Continent, to study with Kronecker in Berne, in Würzburg, and finally with Schmiedeberg in Strassburg. He was assitant to Schmiedeberg from 1892 to 1893, and his reverence for that pioneer of modern Pharmacology was shown in his subsequent dedication of his own great Text-Book « dem Meister vom Schüler ». Cushny left Strassburg for the Chair of Pharmacology in the University of Ann Arbor, Michigan, where for twelve years, between the ages of 27 and 39, in a growing centre of medical science, he passed what he has himself described as the « formative » period of his life. It was there, indeed, that he carried out in association with his pupils the investigations on the heart-beat and on the action of digitalis which have already obtained classical rank, and there, too, that he wrote his great Text-Book of Pharmacology and Therapeutics, the first really comprehensive book in any language to deal with the subject primarily from the experimental side. At Ann Arbor also he began the study of the influence of optical isomerism on pharmacological activity.

In 1905 University College, London, decided to found a new Chair of Experimental Pharmacology. Previously the teaching in that subject had been given by one of the physicians attached to the associated

hospital. The lectureship had, indeed, been rendered illustrious by Sidney Ringer; but the subject had grown to such independent importance that a full-time professor was needed, and the choice naturally fell on Cushny, who had become preëminent among his countrymen in promoting that development. He remained in London for 13 years, during which he firmly established himself as the leading authority on his subject in Britain. The researches which had made his name in America were continued with hardly notable interruption, at first in the one, small, ill lighted room which the College could give for his accomodation, but soon in a new and well-equipped Institute, adjacent to the new Physiological Institute built for Starling. Here he numbered among his pupils and assistants the brothers Gunn, professors now of Pharmacology in Oxford and in Capetown, and A. J. Clark, who succeeds him at Edinburgh. Many visitors, too, from other countries came to share the fruitful work of the quiet years before 1914.

In 1918 Sir Thomas Fraser retired from the Chair of Materia Medica in Edinburgh, and Cushny was invited to succeed him. In London, as in America, he had struck deep roots and made many lasting friendships. But the Edinburgh Chair offered a wider teaching opportunity, and, though the heavier load of administration would curtail his freedom for research, the call of duty and, perhaps, a Scotsman's love for the air of his native land, decided him in favour of this final migration. By a new arrangement, made on Fraser's retirement, the Professor of Materia Medica at Edinburgh now had as associate a Professor of Clinical Therapeutics; and Cushny thus found fresh opportunity, in coöperation with Jonathan Meakins and, later, with Murray Lyon, of coördinating experiment in his laboratory with observation at the bedside. This linking of experimental pharmacology and practical therapeutics had always been one of Cushny's aims, and had led to important developments of his work both at Ann Arbor and, later, in association with Sir James Mackenzie in London. Cushny's zeal and industry showed no sign of flagging during his Edinburgh period. Indeed, the volume of his writing alone, including three monographs, in addition to new editions of his text-book, would have sufficed to account for the leisure that most men could have saved from the exacting duties of such a Chair. For the last few years, however, he worked under a threat which he had mentioned only to few, even among his intimate friends. A chance observation in a practical class showed him that his arterial pressure was dangerously high. His response to the discovery was characteristic. It made no outward difference to his life. He worked quietly and steadily as ever. His one fear was of a stroke which might leave him crippled but alive. Happily the end was according to his wish. To those who were with him during the last few days he seemed to be in unusual health and spirits, keen and alert in mind and body, full of the zest of life and of plans for the future; from this buoyant mood, and from the fullness of his powers, he fell suddenly into the final sleep, without knowing pain or weakness.

A full review of Cushny's work is beyond the scope of a short article. His investigations cover altogether a wide range of subjects, but the future will probably recognize his work in three fields especially, as his most important contributions to knowledge—his work on the heart and digitalis, his work on optical isomers, and his work on the mechanism of urinary secretion. This would seem to have been his own judgment, since, apart from original papers, he had already published monographs on « The Secretion of Urine » and on « The Action and Uses in Medecine of Digitalis and its Allies », and left a third, on « Biological Relations of Optically Isomeric Substances », in the press at the time of his death.

His work on the heart and digitalis began at Ann Arbor, where he not only produced the condition of auricular fibrillation experimentally in a dog, but, in association with Edmunds, recognized the condition in a human patient. That observation laid the foundation for a large part of the structure of modern knowledge, not only of cardiac irregularities, but of the rational and scientific use of digitalis. For Lewis subsequently showed that the condition which James Mackenzie had called « nodal bradycardia » was the result of Cushny's phenomenon of auricular fibrillation, while the joint investigations of Cushny and Mackenzie showed that this is the condition, above all others, to which treatment with digitalis can be rationally and successfully applied.

In his discovery of the contrasts in action between the laevorotary hyoscyamine, hyoscine and adrenaline on the and hand and their dextrorotary isomers on the other, Cushny revealed a fact of primary pharmacological importance. He made it the subject of his Dohme Lectures in Baltimore in 1925, and his forthcoming monograph will show what his critical and cautious mind has been able to evolve from it, towards the solution of the fundamental problem of all pharmacological enquiry —the relation between structure and activity.

Cushny's monograph on the Secretion of Urine, embodying much of his own work and importing a new conception into Ludwig's theory of the process, has had a great influence on recent speculation and research. That the theory, as he left it, would remain permanently valid, he probably did not himself expect; but is has done great service, in any case, in providing a rational framework for existing knowledge and a stimulus to further experiment.

No study of Cushny's published works alone, however, could give an adequate conception of his influence. They reveal him, indeed, as having a mind which was cautious without being timid; a knowledge which was comprehensive and exact; a judgment which never allowed what was essential to be obscured by a pedantic excess of detail; a literary style exactly suited to his purpose, scholarly in its precision and free from rhetorical decoration. But behind these fine qualities of mind was a solid worth of character, a ripe wisdom tinged with genial humour, and a large-hearted generosity, which only personal intimacy could discover. He was not an easy man to know. Temperamentally reserved,

and rather shy in his manner, he did not quickly form new opinions or new friendships, or easily relinquish those which he made. To know him was to trust him absolutely. If he agreed with you, you could count on his unwavering support; if he differed from your view, his opposition would be firm and friendly, and touched with the saving grace of humour. In open debate he was ineffective, for his weak and rather high-pitched voice and modest, hesitating manner contrasted oddly with his massive and handsome presence. None the less, as those can testify who sat with him in the International Conferences at Edinburgh and Geneva, there was none whose opinion carried more weight, when he had been induced to make it clear; and they will understand how the opinion of this quiet, reticent man of science came to be sought in his own country, on every question of public importance to the solution of which his wisdom and experience could contribute.

The War meant for Cushny, as for others, the interruption of many valued friendships, and the diversion of his activities into strange channels. Firm in his loyalty to the cause of his own country and her allies, he was ready to respect such loyalty in others, and, when the end came, to promote the renewal of scientific fellowship. In this International Journal of Pharmacology and Therapeutics it is fitting that we should remember Cushny, not only as a leader in our science, but as a friend of international coöperation, and of science without artificial boundaries of language, race or political loyalty.

H. H. Dale.

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Les Archives internationales de Pharmacodynamie et de Thérapie

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Six fascicules forment un volume d'environ 500 pages.

Prix du volume XXXII :

Intérieur : **100** francs ; Extérieur : **3.60** dollars.

Les auteurs reçoivent 50 tirés à part.

Secrétariat de la rédaction : Institut de Pharmacodynamie
3, Quai Baertsoen, Gand (Belgique).

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GUSTAVE VANDERPOORTEN ÉDITEUR, RUE DE LA CUILLER, 20, GAND.